THE TANGIBLE WRITING OF THE BLIND

Edward E. Allen

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THE TANGIBLE WRITING OF THE BLIND.

By Edward E. Allen,

Instructor in the Perkins Institution for the Blind.

MANY visitors come to the Perkins Institution at South Boston, and few of them fail to express surprise at seeing its pupils actually writing on paper in a system legible to the touch. "What! are they writing? — and can they read what they have written?" When our friends have seen and heard for themselves, the usual remark is, "How wonderful!"

With embossed reading-matter the general public is not unacquainted; but we at the school judge, from experience, that the existence of embossed writing cannot be widely known, or at least fully understood. Hence this paper, which will treat only of a system of which many persons who have lost their sight in adult life have said that learning it was the next best thing to having their sight restored.

Sixty-one years ago, before sickness had bereft the infant Laura Bridgman of sight and hearing, a system was worked out in France, whose introduction was to inaugurate the "greatest advance that has ever been made in the education of the blind." France first made it possible for the blind

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to read, and it was France that first made it possible for them to write what they themselves could re-read. When the blind read, their education began; when they wrote, the high-road to independence lay open to them.

It is idle to dwell upon the use of writing as a factor in education. It is enough to bear in mind that if fingerless children were so numerous as to form a class, toe-writing or mouth-writing would be systematically taught in their schools. We who are able to put our thoughts on paper do not stop to realize how dependent our condition would be were we deprived of a means of writing. Such was, however, the condition of the blind until a professor of the Paris school, himself blind, and consequently sensible of the needs of his class, largely gave himself up to the invention of a system of relief writing, and in 1829 was able to give to the world the one which bears his name — "Braille."[1] Did the world quickly adopt this system? No, indeed; its characters bore about as much resemblance to those of common writing as Goodyear's rubber suit bore to the umbrella. People looked askance at this singular system. Some styled it Choctaw; but Choctaw or not, in France its merits have caused it to supplant all other systems of embossed print. In Germany and England books are being printed in point instead of line; and this would also be more generally true in America, if the superintendents of the different schools could unite on some one common alphabet.

The merits of Braille's system are twofold: first, it can be rapidly written without the aid of sight; second, it can be easily read with the finger. The Morse alphabet consists of different combinations of dots and dashes; the Braille, of different combinations of dots. Now, it is evident that arbitrary combinations of dots or points may represent letters. Given a suitable apparatus for embossing these letters, and the blind can write. His alphabet and apparatus will forever be a monument to Louis Braille.

The characters of this system are formed out of the varying combinations of six points, placed in two vertical rows of three each. These six points admit of sixty-three different combinations — enough, indeed, for all the requirements of our written language. Thus Braille is not stenographic, as might be supposed, but orthographic throughout. This alphabet was built up originally in a way to assist the memory in learning it; but as one needs at the most but a few hours to learn it, we at the Perkins Institution use an alphabet essentially like Braille's, but formed on the more scientific principle, that the most frequently recurring letters shall consist of the fewest points. In this way we gain twenty-five and one-half per cent both in time and in the labor of writing. But only those who have actually to write for touch-reading are in a position to appreciate those advantages. In addition to time and labor, space also may be saved by the use of a carefully worked up system of word signs and orthographic contractions.

For good writing a stiletto and a tablet are necessary. Our tablet resembles, in shape, a boy's slate. The wooden frame is hinged above, however, so as to admit a sheet of paper between it and the bed, which is zinc, and is furrowed from right to left with shallow parallel grooves, eleven to the inch. With the stiletto, a rounded steel point let into a wooden handle, the writer pushes into these grooves little caps of paper, which, when the sheet is removed, appear as little prominences on the other side. To guide the stiletto in placing the points, he has a movable brass ruler, punched with rows of equidistant and similar cells, in which all the six points or any combinations of them may be made.

Ordinary reading-matter is read from left to right; but if seen from the reverse, as it may easily be on the front windows of some horse-cars, it will have to be read from right to left, and the letters face the wrong way. It may appear, therefore, that the blind have to learn two point alphabets — one to read and the other to write. But this is not so, if the system be properly taught. Each boy of a class of beginners in Braille is supplied with six pegs and a wooden block whose surface is pitted over with groups of six equidistant holes placed in the Braille oblong. Each hole has its number: the upper left is *one*, middle left *two*, lower left *three*, upper right *four*, middle right *five*, and lower right *six*. Thus peg in hole number one is *a*; pegs in one, two, six, make *b*; in one, two, five, *c*; etc. The alphabet must

[1] Commonly pronounced Brale.

IMPROVED BRAILLE ALPHABET.[1]

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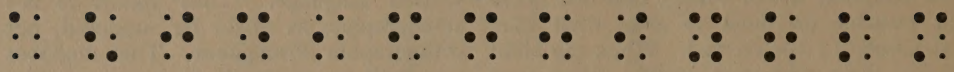

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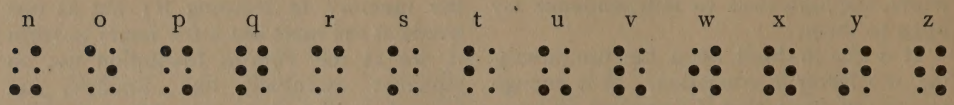

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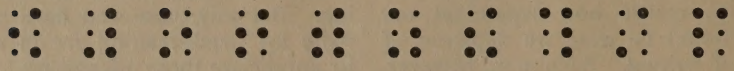

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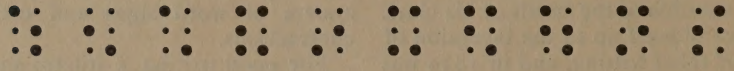

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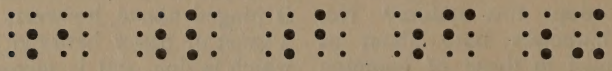

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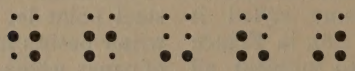

PUNCTUATION-MARKS.

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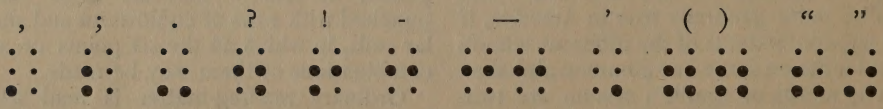

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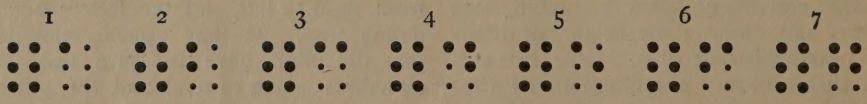

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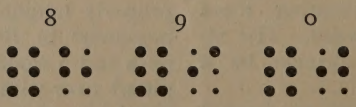

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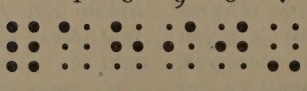
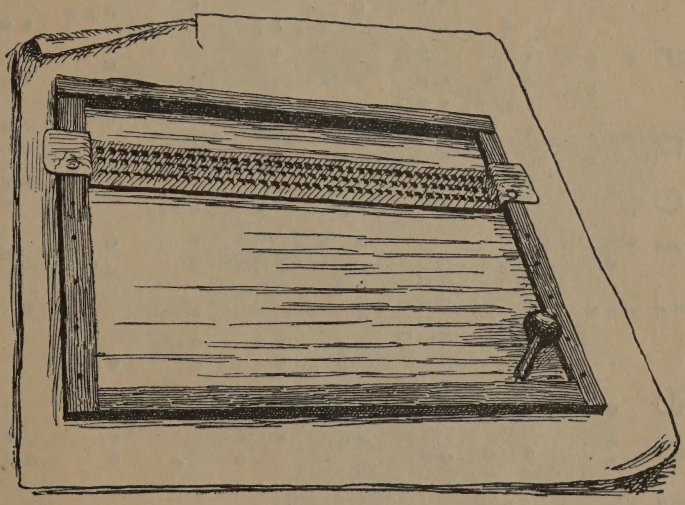


[1] The heavy dots indicate the raised points, the small dots being printed here simply to show the relations.

be thoroughly learned in this way, — the pupil being able to give at once, by number, the dot or dots that make the letters. He is then given another block like the first, in which the pits are bored through, so that the pegs will stand out on the other side. When he turns this over he quickly sees that in order to have a peg appear for reading in position "one," which is that of the extreme upper left hole, it must be put into, or written in, the extreme upper right. The same numbering is kept both for reading and writing, and the anticipated trouble of learning two alphabets is avoided. Beginners usually take to this kind of writing as ducks take to water, and spend much of their free time in practising it. One often finds a boy dictating to a whole class of little writers. And the pride of ownership each has in his tablet! He wants his name on it, too. Indeed, the lad has scarcely bought the tablet, when off he trots to get it marked. And when he himself feels on the frame the round heads of minute tacks, and reads in these his own name, then truly he marches off hugging what he knows is his very own. And then the correspondence that goes on, and the books that are made! Such little joys help to make the teaching of the blind not only interesting, but also absorbing.



Braille Tablet and Stiletto.

The subjects of school instruction at the Perkins Institution are many and varied. The upper classes are pursuing high-school work. English is the basis of instruction from entrance to graduation. How vastly less effective to the pupils, and how much more fatiguing to the teachers, would this instruction be without a means of tangible writing! By its aid the pupils write dictation exercises, compositions, and examinations to be handed to the teacher; and can preserve for future use quotations, topics, notes, mathematical examples, and propositions given out in class. Enlarged diagrams, geographical maps, and geometrical figures drawn with a dressmaker's wheel, and so made tangible, may be lettered in Braille, and the different parts referred to by letter. Thus we see that the blind are not deprived of drawings as a means of illustration. The blind "see" truths shown to them in this way as clearly as do the seeing.

Now, if our schools for the blind are better to-day than ever before, is it not because the methods of instruction used in them have approached nearer and nearer to those used in ordinary schools? The experiment of teaching the blind in seeing schools is being tried in England. In certain of the Board Schools of London one often finds blind pupils working successfully with the rest. Whatever extra attention they need is given them by special blind teachers who pass from school to school for that purpose. Several of our pupils have, after leaving us, been graduated from the Framingham Normal School. One of these further pursued a special course at Wellesley College, where she successfully completed in one year all the mathematics required in the first two years of her course. A simple system of numerical notation may be written out in point. Taking advantage of this, our college girl was able to write out tables of logarithms.

The following letters were written, at my request, by two young blind women who are fitting themselves to teach: —

EXAMPLE OF BRAILLE—ACTUAL SIZE.

[1] THE LION'S SHARE. — A lion and some beasts went out hunting together. When they had caught a fine stag, the lion divided the spoil into three parts, and said, "The first I shall take as king; the second I shall take because I am the strongest; and as for the third part, let him take it who dares."

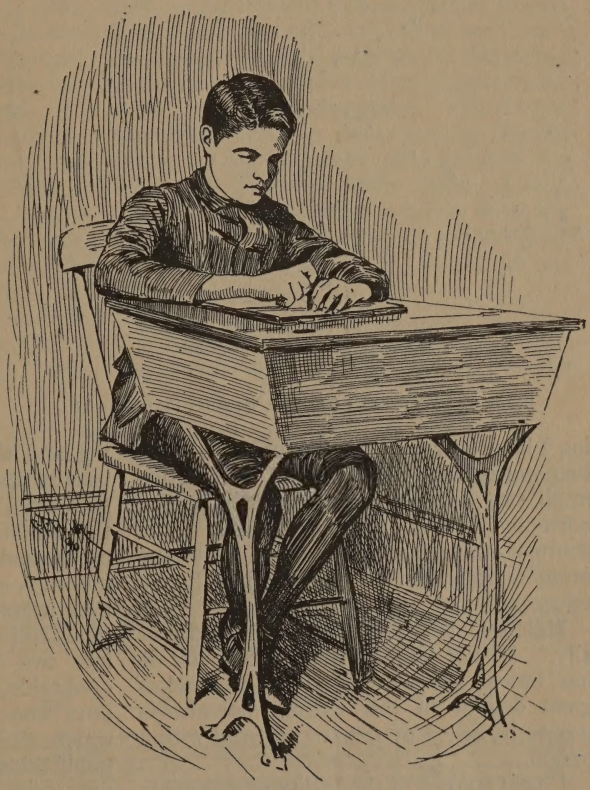
I have found the Braille of inestimable value. Without it or some such point system it would have been far more difficult for me to have passed through my school course. The system is very simple, and can be *easily* and *rapidly* written and read. It is in being able to read readily what he has written that a person experiences the advantage of such a system. With its aid a child can take part in all written exercises, as dictation, composition, etc. I have found it especially useful in taking notes. During my course at Framingham I have been obliged to employ a reader; but by taking an outline of the subject as it was read, I have been able to learn my lessons with much less reading than I could otherwise have done and have thus curtailed the expenses of a reader. Without it I should have been unable to retain in a system legible to myself the very valuable plans which were given to the students. I think notes are valuable to any teacher; but to one who is without sight they are especially so. The objection is sometimes raised that the sighted cannot read the Braille. This is certainly a drawback; but it seems to me that any person, of even a small amount of interest, can acquire that which a child of four or five years of age can learn.

LILY BELL.

The Braille system has been of priceless value to me, principally because I can write as well as read it. The dotted alphabets are the only ones for the blind which they are able to write as well as read. I have a large collection of books of nearly all the subjects I studied at school; also many books of choice passages and poems. These were all written either by myself or by friends. And it is certain that I could not have possessed many of them, as I now do, had we not been able to write for ourselves. It is impossible to have so many books in Braille as are printed for the use of sighted people; but we have a great many more than we could have had if it were not for our own additional efforts. The notes we have taken in class are of great value to us; for it is not possible to remember for a very long time all the facts we should like to know, and it is not always convenient or agreeable to apply to others for knowledge which we can just as well have for our own reading. Facts of all kinds are much more firmly fixed in the mind, if one has practice in writing them down. I have found the Braille particularly useful in my work this last year at the Framingham Normal School. My friend and I were obliged to have a sighted reader; but by taking down an outline of each lesson we were able to prepare it as the others of our class did. The reading lessons we should have been obliged to omit entirely had we not been able to write out each lesson. This would have been a serious loss to us; for they were excellently conducted. My note-books for the year's work at Framingham comprise at least sixty quires of paper. I have taught this system to many sighted persons, and they do not find much difficulty in learning it after it is explained. I have the great pleasure of receiving letters from my family and my friends, which I can read myself. It is much pleasanter for me to read my own letters than to have others read them to me. I can read them when I choose, and as many times as I wish.

FLORENCE HAWK.

Matter written out in Braille does not occupy, as might be supposed, an extraordinary amount of space. An article which, in the paper published by our boys, occupies in the Braille copies sixteen pages,



Boy writing Braille.

occupies in the type-writer copy seven pages of the same size.

The sightless can learn to write with a pencil, and to write remarkably well. This accomplishment is of use in correspondence with seeing friends; but pencil-writing is at best a very slow and tedious process. The blind do not like to write it; they cannot correct what they have written, or

be sure that the page is not soiled. They much prefer type-writing when they can afford a type-writer. A Braille type-writer is yet a desideratum to the blind. Still, Braille may be written by the hand with surprising rapidity. The most rapid writing I have ever seen was a stanza of twenty-two words, with punctuations, comprising in all two hundred and sixty-four points, correctly written in one minute. The shortest time in which I could write the same matter with a pen was just half a minute.

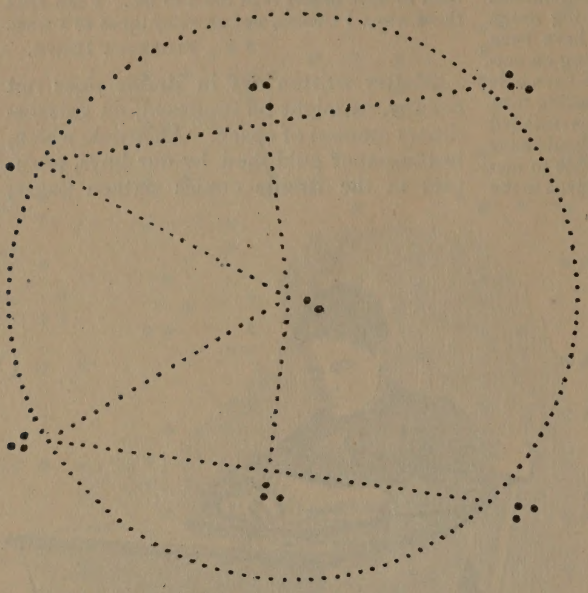


Figure from Wentworth's Geometry, Book II., Proposition VII.

Helen Keller uses the Braille continually. All her compositions and many of her letters are written in it. She takes great delight in this writing, but always has to be asked or coaxed to write with a pencil.

I have spoken of the utility of a tangible writing in the school life of the blind, but not of its just as great or greater usefulness in their life outside of school. It insures their perfect privacy of correspondence, for it makes them independent of any one to read or write their letters; it enables them to keep their own accounts; to jot down occasional notes or memoranda (for which a pocket tablet is convenient); to keep a journal or diary; and to copy out favorite poems to be read at odd intervals, as when riding in the cars, or when lying awake at night. Tangible print is especially adapted to reading in bed, inasmuch as it can be read beneath the bedclothes. One of our graduates has Brailled out the whole of *The Lady of the Lake*, *Marmion*, and *In Memoriam;* another, *Aurora Leigh*. I have seen *The Old Curiosity Shop*, in eleven volumes, written by hand; also Prescott's *Conquest of Mexico*, in eleven volumes. Voluminous works these; but how much better to have them so than not to own them at all. Comparatively few works are printed for the blind; the writing out for pay of single copies of whatever is ordered, adds an employment to the limited number as yet open to the blind.

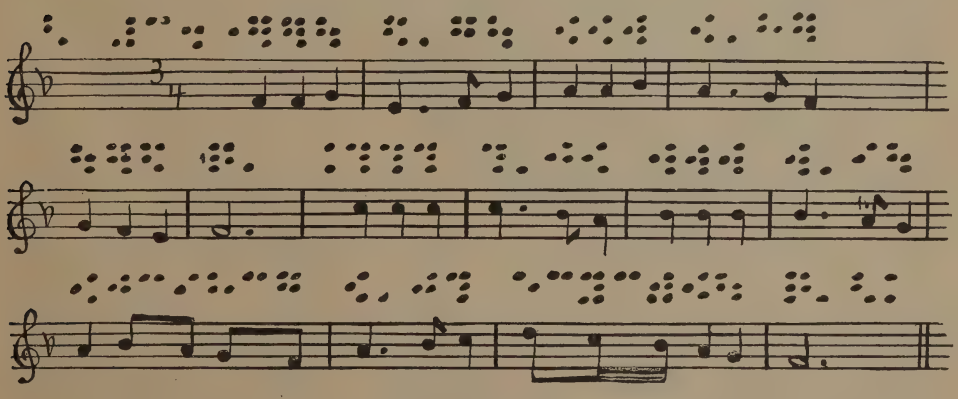
What intelligent visitor who sees the real workings of our school goes away "pitying the poor blind"? The independence of our pupils is most encouraging. The older boys conduct a weekly debate according to Cushing. Having been written out in Braille, the minutes of each previous meeting and the roll-call are read. The boys usually speak extemporaneously, but one side often takes notes from which to answer the arguments of the other. In the paper mentioned above, which the boys publish monthly, each composes his own contribution, which he Brailles out, two sheets at a time, and passes to the editor to be bound into two copies. The articles are really creditable, considering the youth of the boys who write them. The interest with which all the pupils look forward to the publication of *The Echo*, and the eagerness with which they read it afterwards, are quite noticeable. Last year some of our boys wanted to perform a certain mock trial, of which their only copy was in seeing print. How was this to be learned? Thus: Each wrote his own speeches and cues from dictation, and then learned them, and the trial came off with marked success. Similarly two of Jane Andrews's geographical plays have been recited in public by our smaller boys, — and something of a purely literary character is under the boys'

fingers at the time of this writing. Part of this year's exercises given by our girls on Washington's Birthday consisted of readings from point print of personal reminiscences of Laura Bridgman. I believe the reporters present obtained that morning their first introduction to the Braille system.

When the day's work is done, how pleasant to be able to sit down to a game of whist or euchre! Our boys play cards among themselves or with seeing friends, and many of them become expert players. They use ordinary playing-cards marked in the upper right-hand corner with two point letters to name the card; thus, Q. D., is queen of diamonds, 5 S. is five of spades, etc. Each boy names his card as he plays it, so that all the players can follow the game without loss of time. To play in this way requires more memorizing than people who see the cards use, and for this very reason the blind are likely to become the more expert players. A great many card games may be Brailled out, such as "Authors," or "Logomachy," to pass away hours in happy relaxation.

Many people have probably read in *Chambers's Encyclopedia* (edition 1868), under the subject, "The Blind," these words: "Embossed music, palpable to the touch, has been tried in instructing the blind, but without success, so that all depends on the pupil's power of memory, quickness in the articulation of a passage of music which is read over to him, just as an ordinary sentence to a boy writing from dictation." The fact is, however, that M. Braille long ago adapted his point system to musical notation. He was himself a musician of no mean standing, and he sincerely recommended his system to his fellow blind men. Now, experience in this country shows that the blind who have the requisite amount of talent are generally certain to make a good income from music; "but to attain this end they must aim high." Besides first-rate masters, instruments, and appliances, they must have a good musical notation.[1] Complete dependence on the eyes of a reader would be a hindrance indeed to the student of music. The value of written music, then, is too obvious to need further words. The blind can not only write and read their pieces or their exercises in harmony, but they can also have them embossed for them on the printing-press. Our Howe Memorial Press is busy issuing Braille music. Last year saw thus printed the whole of Urbach's *Prize Piano School*. The following quotation is taken from the introduction to a small book prepared by Mr. John S. Dwight, and printed on our press: —

Feeling that it would be an essential aid both to the musical culture and to the social and religious satisfaction of the pupils of the "Perkins Institution and Massachusetts School for the Blind," that the musical ones among them should be able to sing together, or to play with their band instruments, some of the fine old German chorals, in the perfect setting of Sebastian Bach, I have made this beginning of a selection for the purpose, printed in the raised type read by fingers.



"America," in Braille.

[1] See Report of Perkins Institution for 1867, p. 15. *Encyclopedia Britannica*, article, "Blind."

One tablet answers all the purposes of word or music writing. Braille musical notation is fundamentally simple. On the one hand, the characters representing the seven letters of the scale are made only in the upper two-thirds of the Braille cell; *i.e.* the learner's attention is first directed to the upper part of the cell, where the note itself is determined; he is told always to associate this note or letter with the key on the instrument; on the other hand, the two points that may be made in the lower third of the cell are devoted to the rhythm. Thus the simple combinations of points *one*, *two*, *four*, *five*, make the letters; these are understood to be eighth notes. To write whole notes, add points *three* and *six* to those standing for the letter. Number three point alone added to the letter makes it a half-note; number six alone makes it a quarter. Other musical signs are determined from their position; *i.e.* in relation to what immediately precedes or follows. As many as are the signs in the pointed music of the seeing, so many must there be, of course, in that of the blind. Therefore any score of music may be written in Braille. It must be evident that in it all the signs and parts are separate, and succeed one another across the page. The blind read the treble with the left hand, while they play it with the right; and the opposite is the case with the bass. They cannot play two parts together, "at sight"; each must be committed separately, and combined in memory for execution. But that this is not a formidable task may be easily understood by any one who has seen it illustrated by Mr. Hollins, or by any other blind musician. Indeed, nothing is farther from the truth than the common belief that the blind are all natural musicians and play by ear or from pure memory of what has been played to them, — although instances like that of Blind Tom might be adduced to show the contrary.

Such, then, is this remarkable system, — a veritable adaptation of means to ends. And yet it is not strange that many among the seeing teachers of the blind have been honestly prejudiced in favor of the Roman letter, which they themselves can read without special trouble; for there is no question that point reading is fatiguing to the eye. Yes; — but an oculist in testing strength of sight does not make use of the test of nicety of touch. He tests sight by means of lines; hence, the line is the natural basis of characters for reading by the eye. The experimental physiologist deems that part of the body most sensitive to touch sensations where he finds that two points can be felt as two points at the least distance apart. The point, therefore, is the natural basis of characters for reading by the finger. If any one doubts this, let him emboss a few small line letters near together, then some points near together, and test his ability to read them with the finger. My own experience is that the finger is easily embarrassed in trying to feel the slight linear changes which distinguish the Roman letters; and that although it is true that most intelligent blind children may learn to read the Roman letter, it is also true that many never learn to read it fluently. The nicety of a *tactus eruditus* is required to read rapidly the fine Boston line type; and many adults who once had this ability tell me that they have lost it, either because they have neglected to keep in practice, or because their daily occupations have dulled the sensitiveness of the reading finger. Such reading, they say, was too much like work, — which it is not difficult to understand.

One of our young men, who despaired of ever keeping up with his class in reading, because the line type never would be aught but "all blur" to him, succeeded, by six hours' work, in mastering a point system wholly new to him, and, without losing more than three lessons, was able to follow from point *Snowbound*, which the rest of the class were reading from line. Although it seems to be generally true that the blind who have acquired the ability to read the fine line letter prefer reading in that type to reading in any other for an equal length of time, still in all my five years' experience in teaching the blind I have never yet found the person who can read from the line books as rapidly as many have read to me from the Braille.

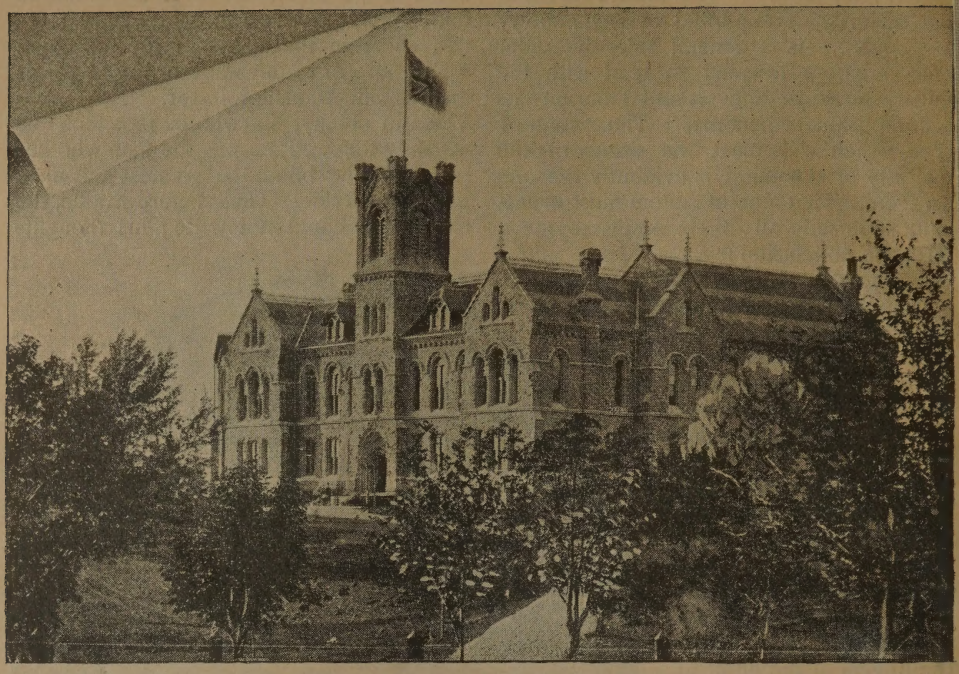
The old argument, that the use of an arbitrary system of print tends to isolate the blind from the seeing, "is not feared by those whom it is intended to benefit. A man is isolated by everything which renders the acquisition of knowledge difficult and tedious, and his isolation is diminished by everything which facilitates his power

of self-education."[1] It is always true that the majority of the blind of any country are adults. As a general rule, the older one is before learning to read with the finger, the more difficult and laborious its accomplishment becomes. The system of type which will meet the wants of the majority of the blind is evidently the one for them. That a point system must eventually supersede all others seems to me a foregone conclusion; for when the blind themselves have been allowed to decide the question of types, as in Paris, they have regarded the line types as interesting curiosities whose period of usefulness has passed away. Who should be the judges of this matter if not the intelligent blind themselves? Truly, the embossed Roman letter systems are but efforts — although well-disposed efforts — to adapt the fingers of the blind to the alphabet of the seeing. The line type of Dr. Samuel G. Howe, whose name every blind man ought to venerate, has been of incalculable benefit, and its perfection as a line type has rightly earned for him the title of the "Cadmus of the Blind" in America. But Dr. Howe, being a man of so much conscience and liberality, could not have failed to urge the use of Braille by the blind, had he but once witnessed the marvellous assistance it has been to one trebly afflicted like Helen Keller, whose English composition is even now more perfect than anything composed by Laura Bridgman. "Nous ne comprendrons jamais assez ce que nous devons à Braille," — the saying of a blind girl, — is full of pathos and eloquence.

On the 30th of May, 1887, the inhabitants of Coupvray, a small town in France, had among them a body of blind people and their friends. These strangers had come to the birthplace of Louis Braille to dedicate a monument to his memory. On this occasion the orator of the day said: "The hero of to-day was a brilliant scholar and an illustrious professor. Next after Valentin Haüy, in whose footsteps he worthily followed, he was the man who has rendered the blind the greatest and most precious service. Thus, before Braille, the blind man could not write; his thoughts could not be put in such a form as to be of use to others. But after this precious invention the blind man could pursue his studies like the seeing; he could take notes, do all the tasks required in classes for literary and musical instruction; he could keep his own accounts, correspond with all those acquainted with his alphabet, preserve his impressions and his inspirations, and transmit them to his fellows. Immense advantages these, the mere mention of which cannot but make every one of you comprehend the resulting benefits."

Louis Braille.

[1] From *The Education and Employment of the Blind*, by Dr. Armitage, London, England.



Queen's University, Kingston.

FIFTY YEARS OF A CANADIAN UNIVERSITY.

By J. J. Bell, M.A.

FIFTY years would be considered only a short period in the life of one of the British or continental universities, whose history extends back for centuries. But in the new world, especially that part of it which lies north of the St. Lawrence and the Great Lakes, where in the early days of settlement the people were too much engrossed in the struggle for bare existence to give much attention to what lay outside their material wants, half a century is a very respectable age for a seat of learning to have reached. The authorities of Queen's University and of the city of Kingston, where it is situated, may be pardoned if they took advantage of the occasion to indulge in a little self-gratulation over the success which has attended the first university that really established itself in the great and growing province of Ontario. The jubilee was celebrated last December, on the anniversary of a meeting held in Kingston at which the project of establishing the institution was first fairly launched.

The old city of Kingston, though not so progressive as some of its western compeers situated in more fertile parts of the province, may be regarded as the cradle of Ontario. When the thirteen colonies gained their independence one hundred and seven years ago, a large number of New England "Loyalists" refused to renounce their old allegiance and, abandoning all their property, crossed to Canada, where they proceeded to hew out, from what was then an almost unbroken forest, new homes for themselves. Most of them found their way to the upper St. Lawrence and the eastern part of Lake Ontario, the section of which Kingston is the natural centre. They brought with them the intelligence and educational instincts which characterized their day, and

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